Major Article
Phage Therapy as an Approach to Control *Salmonella enterica* serotype Enteritidis Infection in Mice

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Abstract

Introduction: *Salmonella enterica* serotype Enteritidis (*S.* Enteritidis) is a cause of food-borne human illness. Given the prevalence of antibiotic resistance of *Salmonella* Enteritidis and the lack of antibiotic efficacy in future years, its replacement with other agents is necessary. One of the most useful agents is bacteriophages. **Methods**: *S.* Enteritidis was identified using a multiplex polymerase chain reaction assay. The effective bacteriophages were isolated from hospital wastewater samples. The effects of the bacteriophages were evaluated both *in vitro* and *in vivo*. **Results**: The phage SE20 belonged to the Podoviridae family, and the genome size was 40 kb. The evaluation of phage SE20 at variable pH ranges showed its susceptibility to pH < 3 and pH > 12. The animal model showed that mice infected with *S.* Enteritidis developed hepatomegaly and splenomegaly, but did not experience gastrointestinal complications after receiving the bacteriophages. **Conclusions**: The results of this study suggest that phage SE20 is a promising candidate for controlling salmonellosis caused by *Salmonella* Enteritidis.

Keywords: *Salmonella enterica* serotype Enteritidis. Phage SE20. Pulsed-field gel electrophoresis. Mice. Sewage.